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Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi

Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figure 1A of 28 sheets

Synthetic BoNT/A Peptides

Peptide Sequence

Number Position Amino acid sequence

•	ide 218–231 main Peptides	A V	Т	L	А	Н	E	L	Ι	Н	Α	G	Н	R	
N1	449-467	A L	N	D	L	С	I	K	V	N	N	W	D	L	F F S P S
N2	463-481	F F	s	P	s	Ε	D	N	F	Т	N	D	L	N	KGEEI
N3	477-495	KG	E	E	I	Т	S	D	Т	N	I	E	А	Α	EENIS
N4	491–509	EE	N	I		L	D	L	I	Q	Q	Y	Y	L	TFNFD
N5	505-523	TF	N	F	D	N	E	P	Ε	N	Ι	S	I	Ε	NLSSD
N6	519–537	NL	s	s	D	I	I	G	Q	L	E	L	М	Р	NIERF
N7	533-551	NI	E	R	F	Р	N	G	K	K	Y	Ε	L	D	KYTMF
N8	547-565	KY	T	M	F	Н	Y	L	R	A	Q	Ε	F	E	HGKSR
N9	561-579	H G	K	s	R	I	Α	L	Т	N	S	V	N	E	ALLNP
N10	575–593	AL	L	N	P	S	R	V	Y	Т	F	F	S	S	DYVKK
N11	589–607	D Y	V	K	K	V	N	K	Α	Т	Ε	Α	A	М	FLGWV
N12	603-621	F L	G	W	v	Ε	Q	L	V	Y	D	F	Т	D	ETSEV
N13	617–635	ЕТ	s	E	v	S	Т	Т	D	K	I	Α	D	I	TIIIP
N14	631–649	T I	I	I	P	Y	Ι	G	Ρ	Α	L	N	I	G	NMLYK
N15	645-663	и и	L	Y	ĸ	D	D	F	V	G	A	L	I	F	SGAVI
N16	659–677	SG	A	v	I	L	L	Ε	F	I	P	Ε	I	Α	IPVLG
N17	673-691	ΙP	V	L	G	T	F	Α	L	V	S	Y	I	A	NKVLT
N18	687–705	N K	v	L	T	V	Q	Т	I	D	N	Α	L	S	KRNEK
N19	701–719	KR	N	E	K	W	D	Ε	V	Y	K	Y	I	V	TNWLA
N20	715–733	TN	W	L	 A	K	V	N	Т	Q	I	D	L	I	RKKMK
N21	729–747	RK	K	M	K	Ε	A	L	E	N	Q	Α	Ε	Α	TKAII
N22	743–761	TK	A	I	I	N	Y	Q	Y	N	Q	Y	Т	E	EEKNN
N23	757–775	EE	K	N	N	Ι	N	F	N	I	D	D	L	S	SKLNE
N24	771–789	SK	L	N	E	S	I	N	K	Α	М	I	N	I	NKFLN
N25	785–803	N K	F	L	N	Q	С	S	V	S	Y	L	М	N	SMIPY
N26	799–817	-													ASLKD
N27	813–831	A S	L	K	D	A	L	L	K	Y	Ι	Y	D.	N	RGTLI
N28	827–845	<u> </u>	_												V N N T L
N29	841–859														KYVDN
							RE					~			

Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi

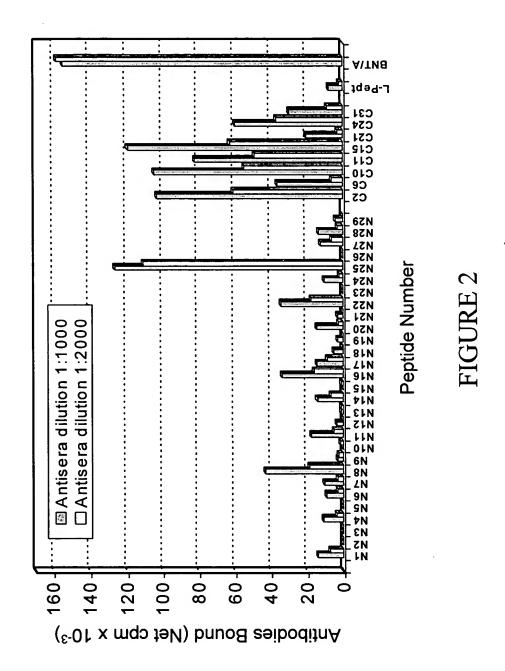
Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figure 1B of 28 sheets

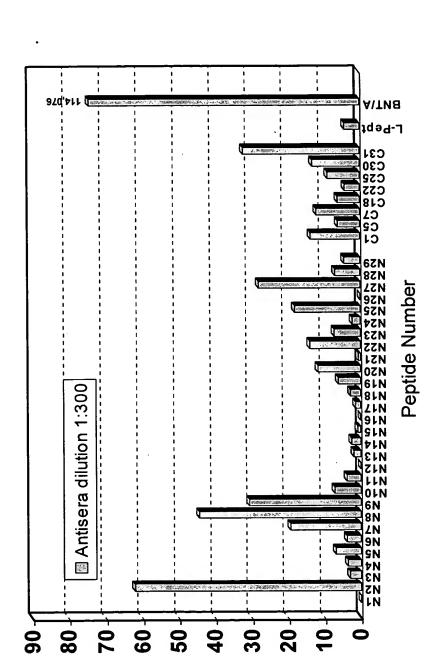
H_c-domain peptides

												
C1	855-873	KYVDN	Q	R	L	L	S	Т	F	Т	E	YIKNI
C2	869-887	YIKNI	I	N	Т	S	I	L	N	L	R	YESNH
C3	883-901	YESNH	L	Ι	D	L	S	R	Y	A	S	KINIG
C4	897-915	KINIG	S	K	V	N	F	D	Р	I	D	KNQIQ
C5	911-929	KNQIQ	L	F	N	L	Ε	S	S	K	Ι	EVILK
C6	925-943	EVILK	N	Α	Ι	V	Y	N	S	M	Y	ENFST
C7	939-957	ENFST	S	F	W	I	R	Ι	P	K	Y	F N S I S
C8	953-971	FNSIS	L	N	N	Ε	Y.	Т	I	I	N	CMENN
C9	967-985	CMENN	S	G	W	K	V	S	L	N	Y	GEIIW
C10	981-999	GEIIW	Т	L	Q	D	Т	Q	E	I	K	QRVVF
C11	995-1013	QRVVF	K	Y	S	Q	M	I	N	Ι	S	DYINR
C12	1009-1027	DYINR	W	I	F	V	Т	I	\mathbf{T}	N	N	RLNNS
C13	1023-1041	RLNNS	K	I	Y	Ι	N	G	R	L	I	DQKPI
C14	1037-1055	DQKPI	S	N	L	G	N	Ι	Н	A	S	NNIMF
C15	1051-1069	NNIMF	K	L	D	G	С	R	D	T	Н	RYIWI
C16	1065-1083	RYIWI	K	Y	F	N	L	F	D	K	Ε	LNEKE
C17	1079-1097	LNEKE	I	K	D	L	Y	D	N	Q	S	NSGIL
C18	1093-1111	NSGIL	K	D	F	M	G	D	Y	L	Q	Y D K P Y
C19	1107-1125	YDKPY	Y	M	L	N	L	Y	D	P	N	K Y V D V
C20	1121-1139	KYVDV	N	N	V	G	I	R	G	Y	М	YLKGP
C21	1135-1153	YLKGP	R	G	S	V	M	Т	T	N	I	Y L N S S
C22	1149-1167	YLNSS	L	Y	R	G	\mathbf{T}	K	F	Ι	Ι	KKYAS
C23	1163-1181	KKYAS	G	N	K	D	N	I	V	R	N	N D R V Y
C24	1177-1195	NDRVY	Ι	N	V	V	V	K	N	K	E	YRLAT
C25	1191-1209	YRLAT	N	A	S	Q	A	G	V	E	K	ILSAL
C26	1205-1223	I L S A L	Ε	I	P	D	V	G	N	L	S	QVVVM
C27	1219-1237	QVVVM	K	S	K	N	D	Q	G	I	Т	N K C K M
C28	1233-1251	NKCKM	N	L	Q	D	N	N	G	N	D	IGFIG
C29	1247-1265	IGFIG	F	Н	Q	F	N	N	I	A	K	LVASN
C30	1261-1279	LVASN	W	Y	N	R	Q	I	E	R	S	S R T L G
C31	1275-1296	SRTLG	С	S	W	E	F	I	P	V	D	D G W G E R

Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552

Figure 2 of 28 sheets





Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figure 3 of 28 sheets

Antibodies Bound (Net cpm x 10-3)

Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figure 4 of 28 sheets

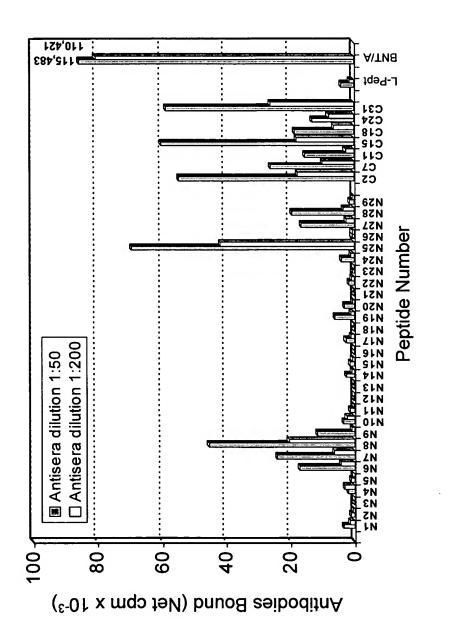


FIGURE 4

Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552

Figure 5 of 28 sheets

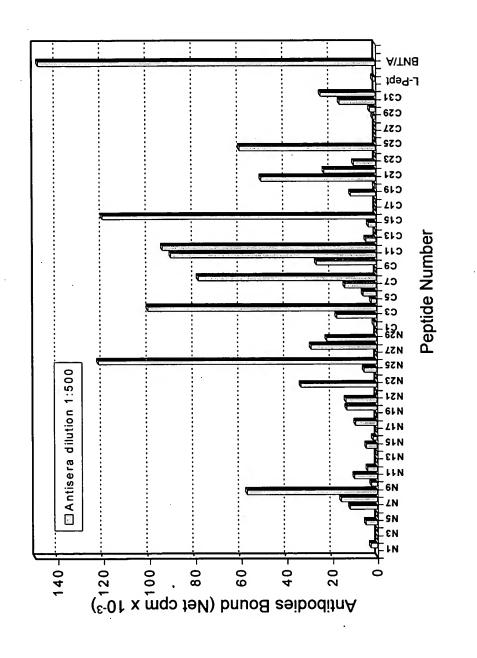


FIGURE 5

Title: Botulinum Toxin A Peptides And...

Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figure 6 of 28 sheets

 H_N domain of BoNT/A (Clostridium botulinum) (Residues 449-859 of SEQ ID NO:1) .

A L N D L C I K V N N W D L F F S P S E D N F T N D L N K G E E I T S
D T N I E A A E E N I S L D L I Q Q Y Y L T F N F D N E P E N I S I E
N L S S D I I I G Q L E L M P N I E R F N I E R F P N G K K Y E L D K Y
T M F H Y L R A Q E F E H G K S R I A L T N S V N E A L L N P S R V Y
T F F S S D V V K K V N K A T E A A M F L G W V E Q L V Y D F T D E T
S E V S T T D K I A D I T I I I P Y I G P A L N I G N M L Y K D D F V
G A L I F S G A V I L L E F I P E I A I P V L G T F A L V S Y I A N K
V L T V Q T I D N A L S K R N E K W D E V Y K Y I V T N W L A K V N T
Q I D L I R K K M K E A L E N Q A E A T K A I I N Y Q Y N Q Y T E E E
K N N I I N F N I D D L S S K L N E S I N K A M I N I N K F L N Q C S V
S Y L M N S M I P Y G V K R L E D F D A S L K DA L L K Y I Y D N R G T
L I G Q V D R L K D K V N N T L S T D I P F Q L S K Y V D N

 H_{C} domain of BoNT/A (Clostridium botulinum) (Residues 855-1296 of SEQ ID NO:1)

K Y V D N Q R L L S T F T E Y I K N I I N T S I L N L R Y E S N
H L I D L S R Y A S K I N I G S K V N F D P I D K N Q I Q L F N
L E S S K I E V I L K N A I V Y N S M Y E N F S T S F W I R I P
K Y F N S I S L N N E Y T I I N C M E N N S G W K V S L N Y G E
I I W T L Q D T Q E I K Q R V V F K Y S Q M I N I S D Y I N R W
I F V T I T N N R L N N S K I Y I N G R L I D Q K P I S N L G N
I H A S N N I M F K L D G C R D T H R Y I W I K Y F N L F D K E
L N E K E I K D L Y D N Q S N S G I L K D F W G D Y L Q Y D K P
Y Y M L N L Y D P N K Y V D V N N V G I R G Y M Y L K G P R G S
V M T T N I Y L N S S L Y R G T K F I I K K Y A S Q A G V E K I L
S A L E I P D V G N L S Q V V V M K S K N D Q G I T N K C K M N
L Q D N N G N DI G F I G F H Q F N N I A K L V A S N W Y N R Q I
E R S S R T L G C S W E F I P V D D G W G E R P L

L-Peptide (amino acids 218-231 of SEQ ID NO:1)

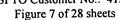
AVTLAHELIHAGHR

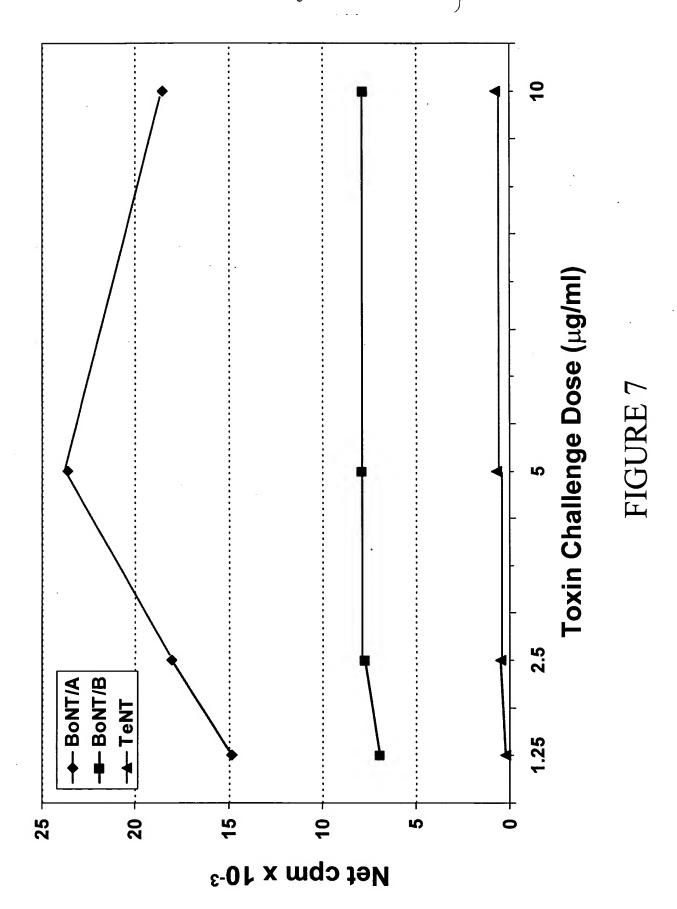
Amino acids 731 to 787 of BoNT/E (SEQ ID NO:4)

KNELTNKYDIKQIENELNQKVSIAMNNIDRFLTESSISYLMKLINEVKINKLREYDE

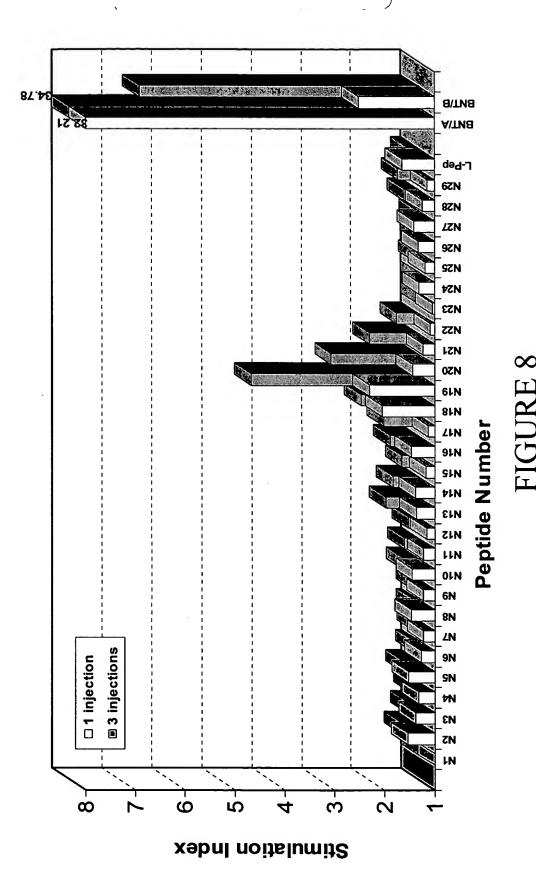
FIGURE 6

Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552

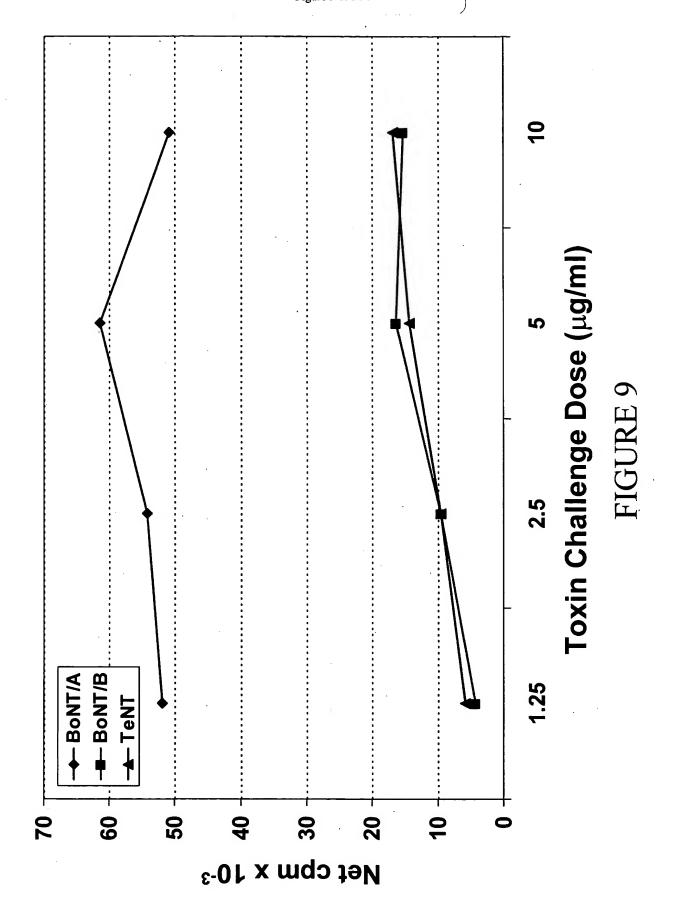




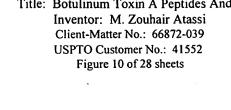
Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figure 8 of 28 sheets

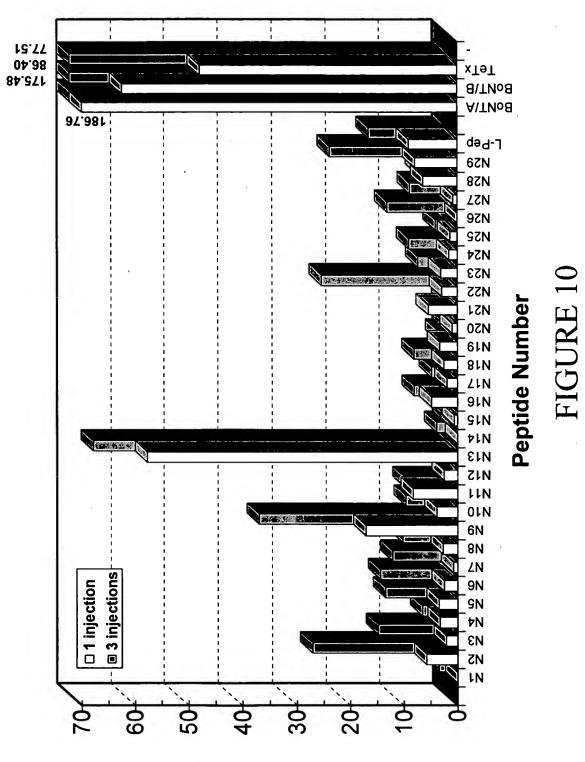


Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figure 9 of 28 sheets



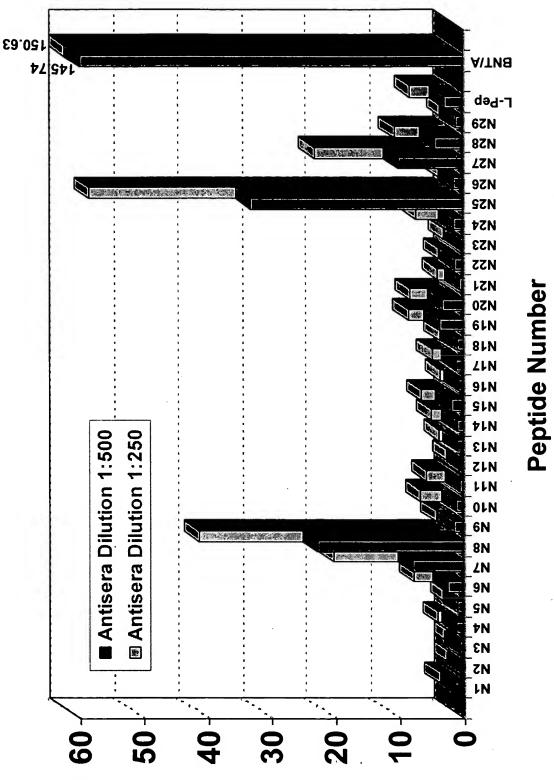
Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552





Net cpm X10-3

Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figure 11 of 28 sheets



Antibodies Bound (Net CPM x 10-3)

FIGURE 11

Antibodies Bound (Net CPM x 10-3)

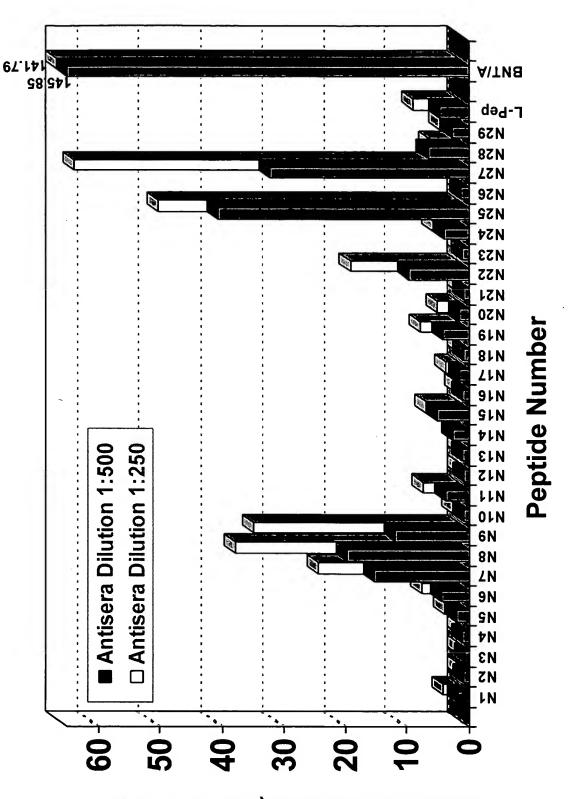


FIGURE 12

Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi

Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figure 12 of 28 sheets Client-Matter No.: 66872-039
USPTO Customer No.: 41552
Figure 13 of 28 sheets

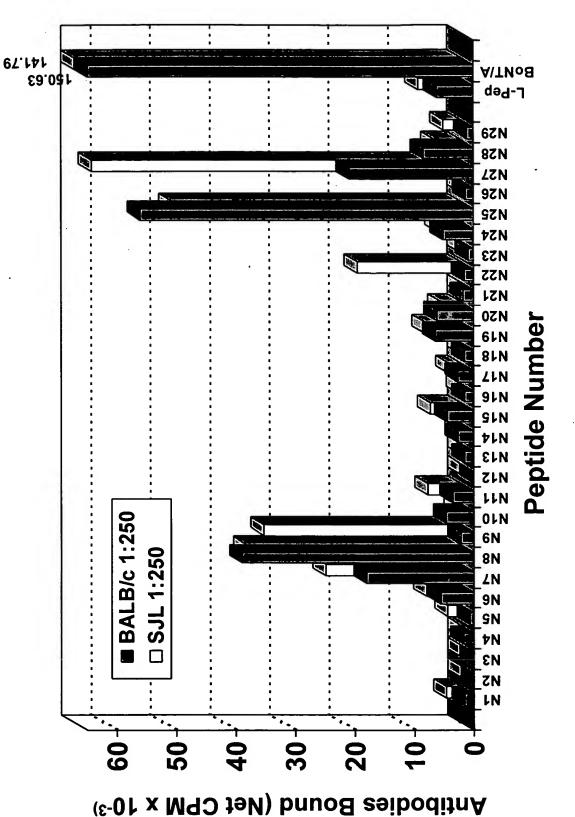


FIGURE 13

Per cent survival

Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figure 14 of 28 sheets Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figure 15 of 28 sheets

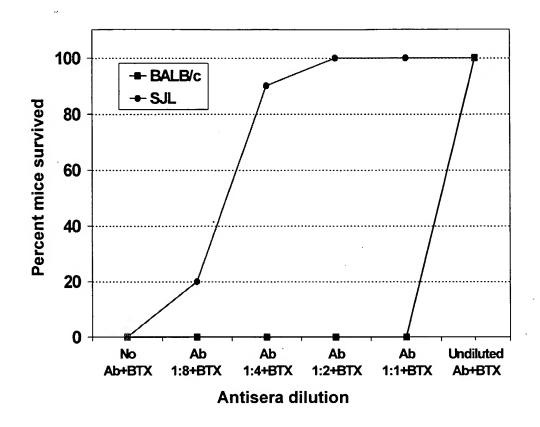
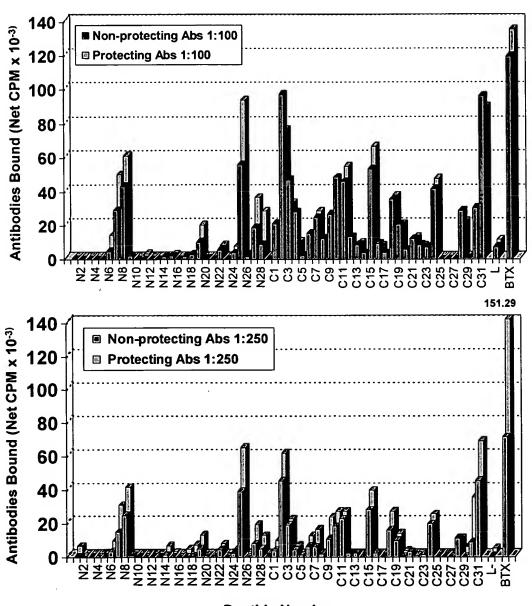


FIGURE 15

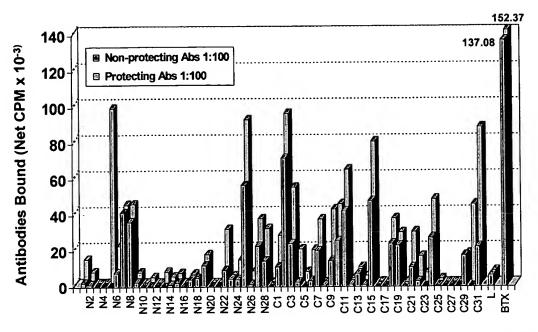
Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figure 16 of 28 sheets

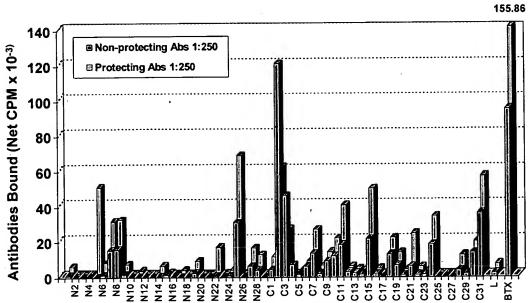


Peptide Number

FIGURE 16

Title: Botulinum Toxin A Peptides And...
Inventor: M. Zouhair Atassi
Client-Matter No.: 66872-039
USPTO Customer No.: 41552
Figure 17 of 28 sheets

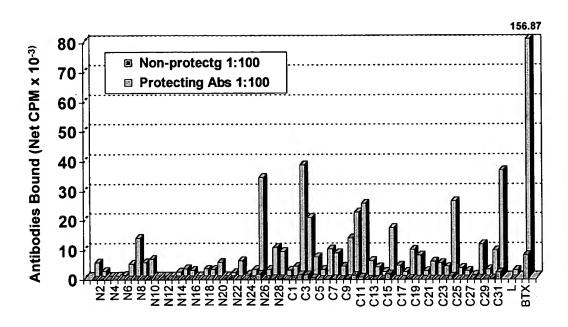




Peptide Number

FIGURE 17

Title: Botulinum Toxin A Peptides And...
Inventor: M. Zouhair Atassi
Client-Matter No.: 66872-039
USPTO Customer No.: 41552
Figure 18 of 28 sheets



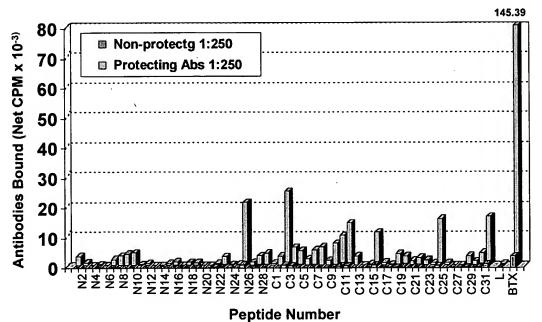
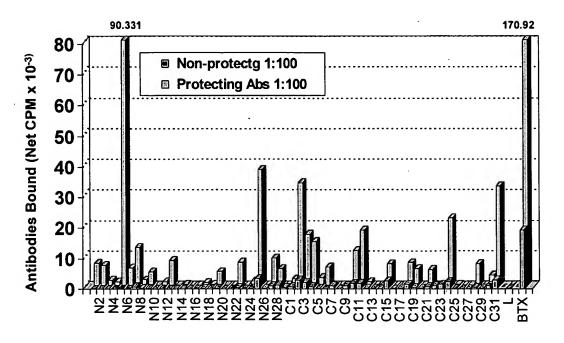
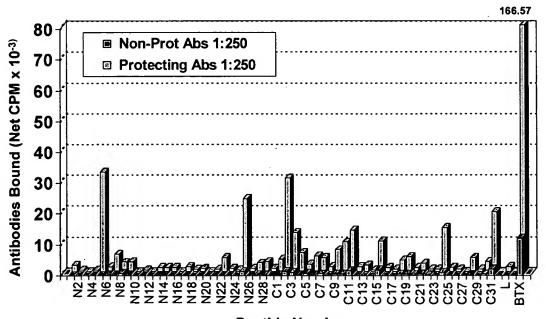


FIGURE 18

Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figure 19 of 28 sheets





Peptide Number

FIGURE 19

Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figure 20 of 28 sheets

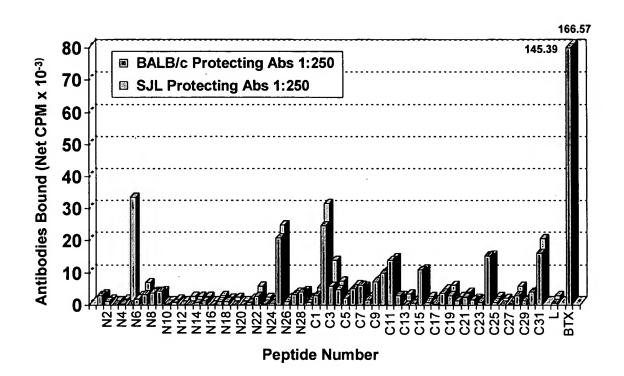


FIGURE 20

Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi

Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figures 21 and 22 of 28 sheets

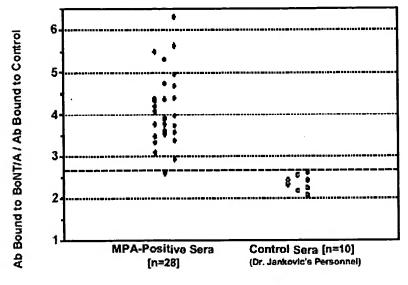


FIGURE 21

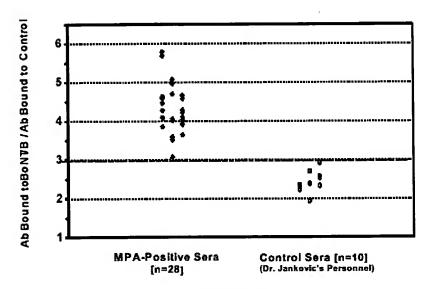


FIGURE 22

Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figures 23 and 24 of 28 sheets

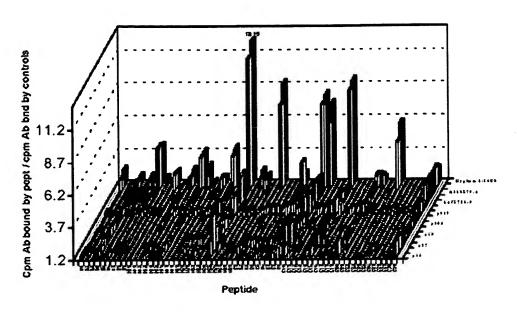


FIGURE 23

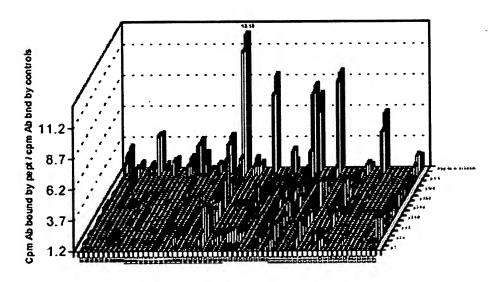


FIGURE 24

Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figure 25 of 28 sheets

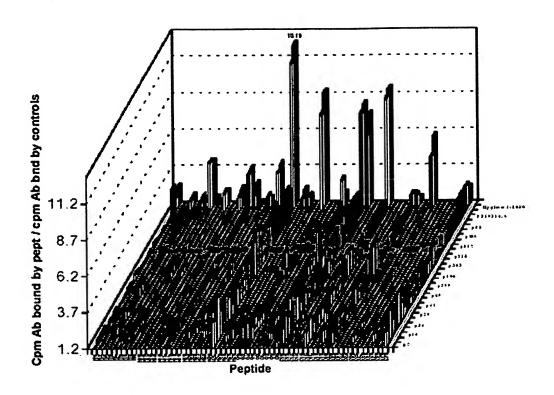


FIGURE 25

Title: Botulinum Toxin A Peptides And...
Inventor: M. Zouhair Atassi
Client-Matter No.: 66872-039
USPTO Customer No.: 41552
Figures 26 and 27 of 28 sheets

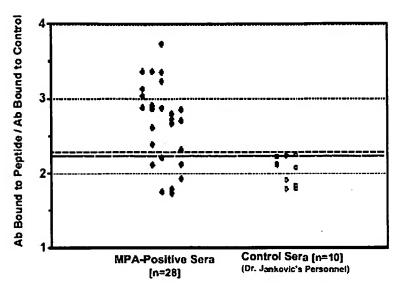


FIGURE 26

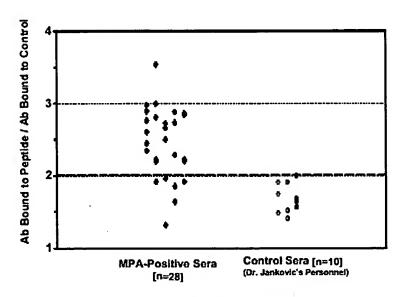


FIGURE 27

Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figure 28 and 29 of 28 sheets

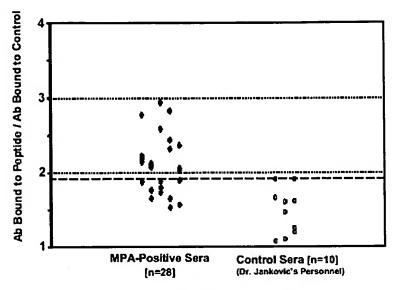


FIGURE 28

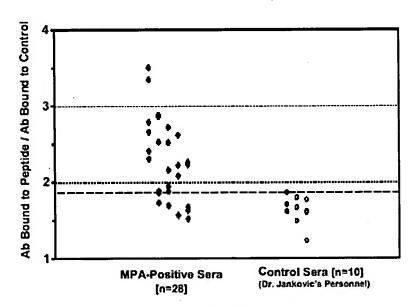


FIGURE 29

Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figures 30 and 31 of 28 sheets

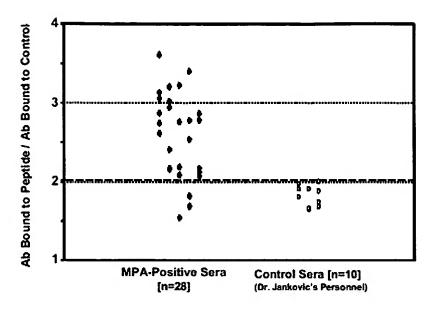


FIGURE 30

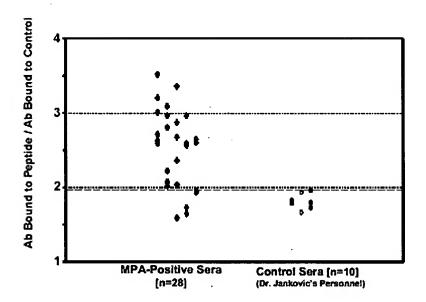


FIGURE 31

Title: Botulinum Toxin A Peptides And... Inventor: M. Zouhair Atassi Client-Matter No.: 66872-039 USPTO Customer No.: 41552 Figures 32 and 33 of 28 sheets

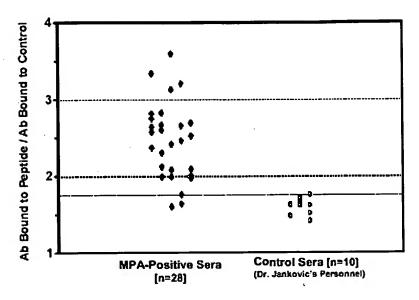


FIGURE 32

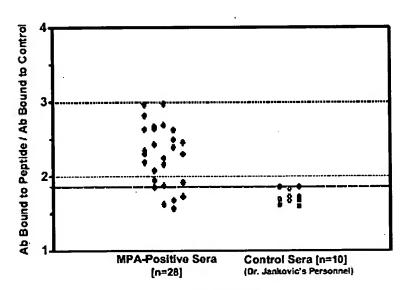


FIGURE 33